

Introduction to Botany. Lecture 22

Alexey Shipunov

Minot State University

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Outline

- 1 Questions and answers
- 2 Mitosis, syngamy and meiosis
 - Syngamy
- 3 Life cycles
 - General life cycle

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Previous final question: the answer

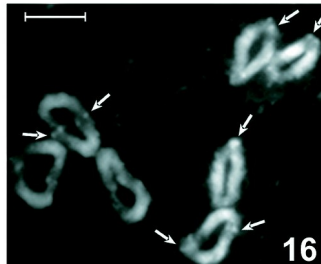
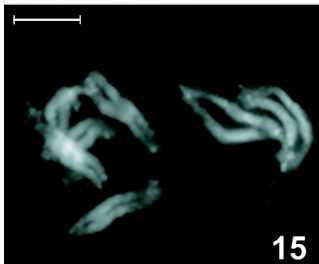
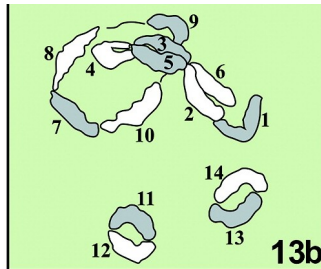
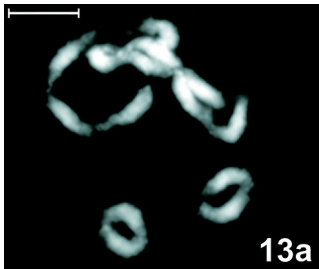
What is the difference between anaphase I of meiosis and anaphase of mitosis?

Previous final question: the answer

What is the difference between anaphase I of meiosis and anaphase of mitosis?

- Segregation of homologs (which have being crossed over in metaphase I) *versus* pulling apart chromatids

Unusual meiosis of evening primrose, *Oenothera*



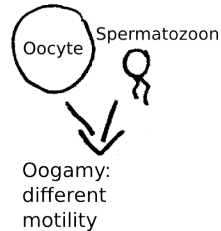
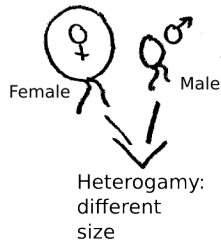
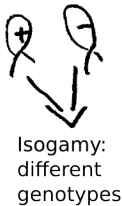
Mitosis, syngamy and meiosis

Syngamy

Definition of syngamy

- *Fusion of two cells, where resulted cell will have two times more chromosomes*
- Initial cells are **gametes**, resulted cell is a **zygote**
- Chromosome formula: $X + X \longrightarrow XX$
- **The goal of syngamy** is the renovation of genetic material
- Syngamy changes genotype of cells

Types of syngamy (Y!)



Polyploids

- If for some reason, meiosis will not run correctly, one of resulted cells could receive double set of chromosomes ($2n$ instead of n)
- If this cell goes to syngamy, resulted zygote will have $3n$ chromosomes
- Cells with $> 2n$ chromosomes are **polyploids**

Life cycles

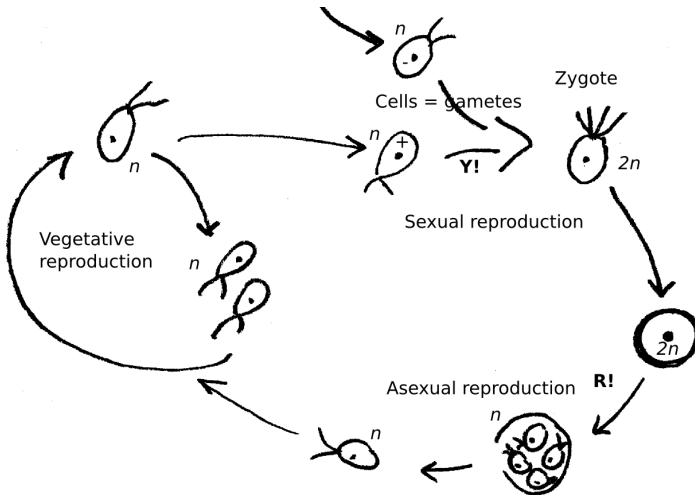
General life cycle

Simple and general life cycles

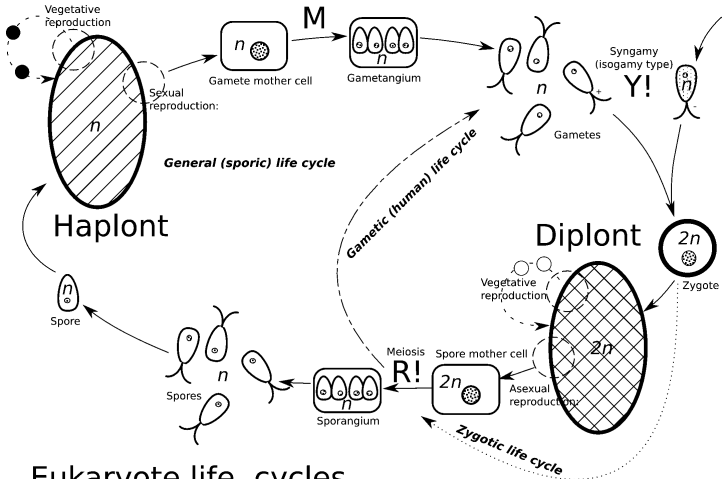
Terms covered:

- Mitosis, meiosis, syngamy
- Haplont, diplont, haploid, diploid
- Gamete mother cell, gametangium, gametes, male, female, spermatozoon, spermatium, oocyte
- Syngamy, isogamy, heterogamy, oogamy, zygote
- Spore mother cell, sporangium, spore
- Sexual reproduction, asexual reproduction, vegetative reproduction

Simple life cycle



General life cycle



Eukaryote life cycles

Final question (2 points)

Final question (2 points)

Why sexes arose in the evolutionary process?

For Further Reading



J. E. Bidlack, Sh. H. Jansky.
Stern's introductory plant biology. 12th edition.
McGraw-Hill, 2011.
Chapter 12.



Th. L. Rost, M. G. Barbour, C. R. Stocking, T. M. Murphy.
Plant Biology. 2nd edition.
Thomson Brooks/Cole, 2006.
Chapter 12 (skip angiosperm life cycle!).